

PATENT CLAIMS

1 1. Nucleic acids coded for a deregulated 3-phospho-
2 glycerate dehydrogenase containing a gene *serA* according to SEQ ID
3 No. 1 or an allele, homolog or derivative of this nucleotide
4 sequence or a nucleotide sequence hybridizing therewith.

1 2. Nucleic acids coding for a deregulating 3-
2 phosphoglycerate dehydrogenase containing a gene *serA* according to
3 SEQ ID No. 2 or an allele, homolog or derivative of this nucleo-
4 tide sequence or a nucleotide sequence hybridizing therewith.

1 3. Nucleic acids coding for a deregulating 3-
2 phosphoglycerate dehydrogenase containing a gene *serA* according to
3 SEQ ID No. 3 or an allele, homolog or derivative of this nucleo-
4 tide sequence or a nucleotide sequence hybridizing therewith.

1 4. Nucleic acids coding for a deregulating 3-
2 phosphoglycerate dehydrogenase containing a gene *serA* according to
3 SEQ ID No. 4 or an allele, homolog or derivative of this nucleo-
4 tide sequence or a nucleotide sequence hybridizing therewith.

1 5. Nucleic acids coding for a deregulating 3-
2 phosphoglycerate dehydrogenase containing a gene *serA* according to
3 SEQ ID No. 5 or an allele, homolog or derivative of this nucleo-
4 tide sequence or a nucleotide sequence hybridizing therewith.

5 REPLACEMENT SHEET (RULE 26)

1 6. Nucleic acids according to one of claims 1 to 5
2 characterized in that they are isolated from coryneform bacteria.

1 7. Nucleic acids according to one of claims 1 to 6
2 characterized in that they are isolated from *Corynebacterium* or
3 *Brevibacterium*.

1 8. Nucleic acids according to one of claims 1 to 7
2 characterized in that they are isolated *Corynebacterium glutamicum*
3 or *Brevibacterium flavum*.

1 9. A gene structure containing at least one of the
2 nucleotide sequences according to claims 1 to 8 as well as
3 regulatory sequences operatively linked therewith.

1 10. A vector containing at least one nucleotide se-
2 quence according to claims 1 to 8 or a gene structure according to
3 claim 9 as well as additional nucleotide sequence for selection,
4 replication in the host cell or for interaction in the host cell
5 genome.

REPLACEMENT SHEET (RULE 26)

1 11. A deregulated 3-phosphoglycerate-dehydrogenase or a
2 part thereof loaded by means of a nucleic acid sequence according
3 to one of the claims 1 to 8.

1 12. A deregulated 3-phosphoglycerate-dehydrogenase
2 according to claim 11 with an amino acid sequence according to SEQ
3 ID No. 7 or a modified form of this polypeptide sequence or
4 isoform thereof.

1 13. A deregulated 3-phosphoglycerate-dehydrogenase
2 according to claim 11 with an amino acid sequence according to SEQ
3 ID No. 8 or a modified form of this polypeptide sequence or isoform
4 thereof.

1 14. A deregulated 3-phosphoglycerate-dehydrogenase
2 according to claim 11 with an amino acid sequence according to SEQ
3 ID No. 9 or a modified form of this polypeptide sequence or isoform
4 thereof.

1 15. A deregulated 3-phosphoglycerate-dehydrogenase
2 according to claim 11 with an amino acid sequence according to SEQ
3 ID No. 10 or a modified form of this polypeptide sequence or
4 isoform thereof.

Replacement Sheet (Rule 26)

1 16. A deregulated 3-phosphoglycerate-dehydrogenase
2 according to claim 12 with an amino acid sequence according to SEQ
3 ID No. 11 or a modified form of this polypeptide sequence or
4 isoform thereof.

1 17. A polypeptide according to one of claims 11 to 16
2 characterized in that it derives from coryneform bacteria.

1 18. A polypeptide according to one of the claims 11 to
2 17 characterized in that it derives from *Corynebacterium* or
3 *Brevibacterium*.

1 19. A polypeptide according to one of the claims 11 to
2 18 characterized in that it derives from *Corynebacterium glutamicum*
3 or *Brevibacterium flavum*.

1 20. A microorganism containing at least one nucleic acid
2 according to claims 1 to 8 in replicatable form and which by
3 comparison with the wild type microorganism is expressed in an
4 amplified manner and/or has its copy number increased.

1 21. A microorganism according to claim 20 containing in
2 replicable form a gene structure according to claim 9 or a vector
3 according to claim 10.

Replacement Sheet (Rule 26)

1 22. A microorganism according to one of the claims 20 to
2 21 containing at least one polypeptide according to claims 11 to
3 19 which, by comparison to the corresponding wild type line shows
4 an active deregulated 3-phosphoglycerate-dehydrogenase.

1 23. The microorganism according to one of the claims 20
2 to 22 characterized in that it is a *Coryneform* bacterium.

1 24. The microorganism according to one of claims 20 to
2 23 characterized in that it belongs to the familia *Corynebacterium*
3 or *Brevibacterium*.

1 25. The microorganism according to one of claims 20 to
2 24 characterized in that it belongs to *Corynebacterium glutamicum*
3 or *Brevibacterium flavum*.

1 26. A probe for identifying and/or isolating genes coded
2 for proteins participating in the biosynthesis of L-serine charac-
3 terized in that they are made starting from nucleic acids according
4 to one of the claims 1 to 8 and containing a marker suitable for
5 detection.

Replacement Sheet (Rule 26)

1 27. The method for microbial production of L-serin
2 characterized in that

3 a) at least one nucleic acid according to one of the
4 claims 1 to 8 is isolated from a coryneform bacterium and is
5 translated in a microorganism and there expressed, whereby the gene
6 expression and/or the activity of the corresponding coded
7 polypeptide is increased with respect to the corresponding
8 microorganism which has not been genetically altered;

9 b) this genetically modified microorganism from step a)
10 is used for microbial production; and

11 c) the correspondingly formed L-serine is isolated from
12 the culture medium.

Replacement Sheet (Rule 26)